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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional): 00100.03.0034

I hereby certify that this correspondence is being forwarded via electronic submission to:
Electronic Business Center, Commissioner for Patents, Mail Stop AF

on January 16, 2008

Signature: Christine Wright

Typed or printed name: Christine A. Wright

Application Number	Filed
10/675,525	September 29, 2003

First Named Inventor: John Bruno et al.

Art Unit	Examiner
2116	James F. Sugent

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- ☐ applicant/inventor.
- ☐ assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- ☑ attorney or agent of record. Registration number 34,414.
- ☐ attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____

Signature: Christopher J. Reckamp

Typed or printed name: Christopher J. Reckamp

Telephone number: 312-609-7599

Date: January 16, 2008

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☑ *Total of 1 forms are submitted.

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: John Bruno et al.
Serial No.: 10/675,525
Filing Date: September 29, 2003
Confirmation No.: 6091
Examiner: James F. Sugent
Art Group: 2116
Docket No.: 00100.03.0034

Title: **ADAPTIVE TEMPERATURE DEPENDENT FEEDBACK CLOCK CONTROL SYSTEM AND METHOD**

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REMARKS FOR PRE-APPEAL BRIEF REQUEST FOR REVIEW

Dear Sir:

Applicants respectfully submit that the Examiner's rejections include clear errors because they ignore claim language, because one or more limitations are not met by the cited publications and/or because the cited publications do not teach what the Examiner alleges.

Claims 17 and 18 stand rejected under 365 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,397,343 to Williams et al. ("Williams"). Claims 12-13, 15-16, 34, 37, 39-40 and 42 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,451,892 to Bailey ("Bailey") in view of Williams. Claim 19 stands rejected as being unpatentable under 35 U.S.C. § 103(a) as being unpatentable over Williams in view of Bailey. Claims 38, 43 and 44 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bailey in view of Williams and U.S. Patent No. 6,889,332 to Helms et al. Claim 41 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Bailey in view of Williams and U.S. Patent Publication No. 2003/0229816 to Meynard ("Meynard"). Claims 45 and 46 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bailey in view of Williams and Meynard.

Claim 17

Claim 17 is a method that requires, among other things, "providing, by a thermal sensor control circuit coupled to the thermal sensor, an interrupt control signal and temperature data in response to the temperature signal." (Emphasis Added). The same claim also requires "causing, by the host processors coupled to the thermal sensor circuit and in response to the interrupt control signal and the temperature data, an increase in the operating frequency of the clock signal

above the nominal operating frequency, when the detected junction temperature is below the maximum rated temperature." (Emphasis added). Neither limitation is taught by Williams.

Initially, Applicants note that the claimed interrupt control signal is not the same "thing" as a generated clock frequency output 104, as alleged by the Office action. The claimed interrupt control signal is, as claimed, a "control" signal and not a clock frequency output generated by a clock adjust device such as clock adjust device 100, as alleged. This distinction is supported by the body of claim 17 where Applicants claim, as part of the same method, "causing, by the host processor … in response to the interrupt control signal and the temperature data, an increase in the operating frequency of the clock signal …." (Emphasis added). Thus, in Applicants' claim 17, the host processor increases an operating frequency of a clock signal at least in response to the interrupt control signal. This distinction is further acknowledged by the Office Action itself where the Examiner appears to equate the claimed clock signal to Williams' generated clock frequency output 104 (page 3). Therefore, a clock frequency output signal is different than an interrupt control signal. For at least the reason that the claimed interrupt control signal is not a generated clock frequency output 104, Williams does not teach what is alleged and the Office Action rejection constitutes clear error.

Further, the rejection also errs in suggesting that the Williams clock adjust device 100 is capable of providing temperature data. For instance, Figure 3 of Williams clearly shows that the heat information from temperature sensor 302 is not an output of the clock adjust device 100 but is rather an *input* to the clock adjust device 100. In fact, it appears that, in one embodiment, Williams' controller 102, which is part of the clock adjust device, processes load and temperature information as received along inputs 105 and/or 106 to determine whether graphics subsystem has exceeded its thermal limits. (Col. 6, ll. 33-44, Col. 4, ll. 20-47; Col. 9, ll. 12-26; FIG. 3). Applicants are unable to find any teaching in Williams that supports the Office Action's allegation that the clock adjust device 100 provides the temperature data from the temperature sensor 302. This is only buttressed by the fact that the Office Action does not provide a citation to a specific column and line number in Williams that allegedly teaches this suggestion. Again, Williams does not teach what is alleged.

Further supporting Applicants' contention that the William's clock adjust device 100 does not provide temperature data, Applicants note that the Office Action appears to correctly recognize that the clock adjust device 100 is capable of receiving heat information from

temperature sensor 302. For instance, the Office Action cites Col. 9, lines 9-26 and Col. 10, lines 40-48 for the proposition that Williams' clock adjust device 100 is responsive to a temperature signal. Thus, the Office Action itself recognizes that Williams' clock adjust device 100 appears to receive temperature information from a sensor and does not appear to provide temperature data. Thus, because Williams' clock adjust device 100 also does not provide temperature data, the Office action's rejection constitutes clear error.

Lastly and with respect to the claimed "causing, by the host processor …, an increase in the operating frequency of the clock signal …", Applicants note that Williams uses a clock adjust device 100, and not a host processor, to increase the operating frequency of a clock signal. The mere fact that a host processor is "inherently present" as suggested by the Examiner is not sufficient to anticipate claim 17 because the inherently present host processor in Williams does not appear to be capable of increasing the operating frequency of the clock signal. Instead, Williams teaches the use of clock adjust device 100 (and not a host processor) for generating and adjusting a clock frequency output 104. In fact, in at least one embodiment, the clock adjust device 100 is part of the graphics subsystem 200. (*See e.g.,* FIG. 2A and FIG. 2B). While the clock adjust device 100 is shown in FIG. 3 as being external to the graphics subsystem 300, the Office Action does not cite to any portion of Williams that states that the clock adjust device 104 is a host processor. To the contrary, the two appear to be different circuits in the system.

For each of the above reasons, the Office action's rejection is clearly erroneous as it ignores claim language, makes allegations that are not met by the cited publications and/or cites publications that do not teach what the Examiner alleges. Claim 17 appears to be in proper condition for allowance.

Claims 12 & 34

Claim 12 is directed to a clock control system for generating a clock signal having an operating frequency set to a nominal operating frequency corresponding to a maximum rated junction temperature that comprises, among other things, "a thermal sensor control circuit [that is] operative to produce temperature data in response to the temperature signal and to provide an interrupt control signal in response to the temperature date." (Emphasis added).

Addressing the above limitation, the Office Action cites Bailey's primary temperature indicator unit 130 as being equivalent to the claimed thermal sensor control circuit" and cites Bailey's primary indicator signal 151 and column 5, lines 28-46 as teaching the provision of an

interrupt control signal in response to the temperature data. The rejection is facially improper because it fails to address claim language. As stressed above, the claimed thermal sensor control circuit is not only operative to provide an interrupt control signal but is also operative to produce temperature data. The Office Action's rejection, without consideration of this claim language, constitutes clear error.

Further, Applicants note that Bailey appears to be incapable of teaching a thermal sensor control circuit as claimed by Applicants. For example, Bailey's primary temperature indicator unit 130 has only one output, the primary indicator signal 151. (Bailey, FIG. 1). The primary indicator signal 151 is asserted when the semiconductor die temperature, as indicated by the output signal of thermal sensor 134, exceeds the primary threshold level. (Col. 5, ll. 34-38). Applicants submit that a signal that is asserted when the semiconductor die temperature exceeds the primary threshold level is incapable of representing both temperature data **and** interrupt control signal. Accordingly, Bailey's primary temperature indicator unit 130 cannot be equated to Applicants' claimed thermal sensor control circuit. In other words, Bailey does not teach what is claimed or alleged by the Examiner.

For each of the above reasons, the Office action's rejection of claim 12 constitute clear error as it ignores claim language, makes allegations that are not met by the cited publications and/or cites publications that do not teach what the Examiner alleges. Because claim 34 contains the same limitation as addressed above and because the rejection to claim 34 is analogous to that of claim 12, the rejection to claim 34 also constitutes clear error.

Claim 45

Claim 45 is directed to a clock control system for generating a clock signal having an operating frequency set to a first frequency corresponding to a first junction temperature comprising, among other things, "memory comprising data representing junction temperatures over a temperature operating range with corresponding clock signal frequencies, where the data representing junction temperatures over a temperature operating range with corresponding clock signal frequencies account for a predetermined physical installation of the circuit on the die." (Emphasis added). The Office Action states that "[n]either Bailey nor Williams teaches the clock frequency accounted for a predetermined physical installation of the circuit on the die." (Page 11). Applicants agree. The Office Action, however, states that this limitation is allegedly taught in paragraph 48 of Meynard. Applicants disagree.

Meynard is directed to the adjustment of the operating speed of a computing system based on the monitoring of the activity of the processing unit in the system. (¶ 0036). Paragraph 48, in its entirety, reads as follows:

> To achieve this, there is provided a circuit which analyses the activity of the processing unit, for instance a given processor, and particularly the activity existing on particular predetermined locations of the latter. In one embodiment, the bus of the processor is precisely monitored for the purpose of determining, at every instant, the number of transactions which are pending.

Applicants submit that, unlike the Office Actions' allegation, paragraph 48 of Meynard is wholly unrelated the claimed feature of Applicants' claim 45: memory comprising data representing junction temperatures over a temperature operating range with corresponding clock signal frequencies that account for a predetermined physical installation of the circuit on the die. Instead, Meynard appears to be directed to the use of a circuit that analyses a processing unit by determining the number of pending transactions. Because counting the number of pending transactions for a processing unit is not the same as memory comprising data representing junction temperatures over a temperature operating range with corresponding clock signal frequencies that account for a predetermined physical installation of the circuit on the die, Meynard does not teach what is alleged. Thus, the rejection constitutes clear error.

Dependent Claims

Each of the dependent claims (namely, claims 13, 15-16, 18-19, 37-44 and 46) add additional novel and non-obvious, patentable subject matter. The aforementioned claims further depend upon one of allowable claims 12, 17, 34, and 45 and are therefore believed to be in proper condition for allowance for at least the same reasons as articulated above.

Accordingly, Applicants respectfully submit that the claims are in condition for allowance and that a timely Notice of Allowance be issued in this case.

Date: January 16, 2008

Respectfully submitted,

By: /Christopher J. Reckamp/
Christopher J. Reckamp
Registration No. 64,414

Vedder Price P.C.
222 N. LaSalle Street, Suite 2600
Chicago, IL 60601
(312) 609-7599
FAX: (312) 609-5005